Section 5: Economic Analysis and Mitigation Actions

Introduction

The following economic analysis was conducted using the cost-benefit analysis guidance contained in Appendix 5. The analysis provides a starting point for the Bonneville County Wildland/Urban Interface Fire Mitigation Group and the responsible fire districts to begin mitigation project prioritization. It should be noted that while some projects provide an excellent return on investment other issues should also be included in the prioritization process. Life safety issues must always take precedence over costs. Other issues include:

- The number of structures in the subdivision
- The number of calls experienced in the area by the fire district
- Past fire history
- Seasonal use patterns
- Availability of funds
- Commitment and involvement of property owners
- Property aesthetics
- Environmental impacts
- Wildlife impacts

Vulnerability Zone Project Economic Analysis:

The following analysis was conducted based on a brief description of the project and the assumptions used to determine the scope and rough order of magnitude cost for the project. The information provided serves as a foundation for project prioritization and resource allocation. Detailed cost estimates may be required for grant applications.

The **implementing actions** are activities that the county agencies and citizens will propose and agree upon as those with potential to reduce risk in the wildland/urban interface.

- ✓ Existing actions Activities that are currently in progress.
- ✓ **Short-term actions -** Activities that county agencies may implement with existing resources and authorities within one to two years.
- ✓ **Long-term actions** These may require new or additional resources or authorities, and may take between one and five years to implement.

WUI Zone 1 – Hoffman Estates/McCoy Creek Road Area – High Risk

Short Term Actions:

- ✓ Develop a wildland/urban interface public education program.
- ✓ Develop an evacuation plan.

Project Description – The Alpine Fire District will conduct public education meetings for property owners in the WUI Zone. Educational materials will be provided. This project will be integrated with development of an evacuation program and will include WUI Zones 1 and 2.

Assumptions – The integrated program cost would be \$5,000 for this zone. If the program saved one home because of actions of the homeowner the ROI would be based on the cost divided into the value of the average property in the subdivision.

• Cost - \$5,000 (this zone)

- Valuation \$68,357 avg. property value
- ROI –13.7:1

Responsible Party: Alpine Fire District

Resources: BLM Community at Risk Program

Proposed Due Dates: Public education program – 7/1/2005

Evacuation plan -9/30/2005

- ✓ *Develop a fuels reduction program.*
- ✓ Apply for grants to procure equipment used for mechanical treatment projects.

Project Description – The Alpine Fire District will assist property owners in the development of a firewise/fuel reduction program. The project shall include mechanical treatments of properties within a 90' radius of structures and will be based on both removal of fuels and the establishment of appropriate types of landscaping. Two mitigation projects will be integrated together, the development of the fuel reduction program and the procurement of the equipment to support the project.

Assumptions – The cost per acre for mechanical treatment is \$3,000, assume a 90' treatment area would include work on only 1 acre or less of property and assume the average property value for the subdivision. The cost of the procurement of the equipment would be divided equally between all properties treated. The cost for the mechanical treatment equipment is estimated at \$11,000 divided by the number of properties treated.

- Cost \$3,000 per acre/\$125.00 est. equipment cost per property
- Valuation \$68,357 avg. property value
- ROI 21.8:1

Responsible Party: Alpine Fire District

Resources: IDL/Forest Service Stevens Grant, BLM Community at Risk Program

Proposed Due Dates: Fuels reduction program - 4/30/2005

Grant applications -3/30/2005

✓ Develop a static water source.

Project Description – The Alpine Fire District, along with property owners will work together to apply for grant funding to install three (3) 10,000 gallon underground static water tanks in the Hoffman Estates Subdivision.

Assumption – The cost for a 10,000 gallon water tank buried below the frost line is \$10,000. The State of Idaho Ratings Bureau requires a flow rate of 250 gallons a minute for two hours or a capacity of 30,000 gallons of water storage.

- Cost \$30,000
- Valuation \$68,357 avg. property value
- ROI 2.3:1

Responsible Party: Alpine Fire District

Resources: To be determined Proposed Due Date: 3/30/2006

Long Term Actions:

✓ Improve the Forest Service road into Hoffman Estates

Project Description – Conduct an engineering study focusing on improvement of the access roads into the Hoffman Estates Subdivision.

Assumption – The study, conducted by the Bonneville County Road and Bridge Department and the Forest Service will be used to further refine costs for road improvement.

• Cost - \$10,000

• Valuation – \$68,357 avg. property value

• ROI - 6.8 : 1 (this action only)

Responsible Party: Bonneville County Road Department/Caribou Targhee National Forest

Resources: Operating Budget (this task only)

Proposed Due Date: 6/30/2006

WUI Zone 2—North side of Palisades Reservoir from Wyoming line to Indian Creek – High Risk

Short Term Actions:

- ✓ Develop a wildland/urban interface public education program.
- ✓ Improve roadways and develop evacuation procedures.

Project Description – The Alpine Fire District will conduct public education meetings for property owners in the WUI Zone. Educational materials will be provided. This project will be integrated with development of an evacuation program and will include WUI Zones 1 and 2.

Assumptions – The integrated program cost would be \$5,000 for this zone plus an additional \$10,000 for an engineering study that will identify roadway improvements. If the program saved one home because of actions of the homeowner the ROI would be based on the cost divided into the value of the average property in the subdivision.

- Cost \$15,000
- Valuation \$78,936 avg. property value
- ROI 5.3:1

Responsible Party: Alpine Fire District

Resources: BLM Community at Risk Program for education/evacuation and applicable agency funds for road improvement

Proposed Due Dates: Public education program – 7/1/2005

Improve roadways/Evacuation plan – 9/30/2005

- ✓ *Develop a fuels reduction program.*
- ✓ Apply for grants to procure equipment used for mechanical treatment projects.

Project Description – The Alpine Fire District will assist property owners in the development of a firewise/fuel reduction program. The project shall include mechanical treatments of properties within a 90' radius of structures and will be based on both removal of fuels and the establishment of appropriate

types of landscaping. Two mitigation projects will be integrated together, the development of the fuel reduction program and the procurement of the equipment to support the project.

Assumptions – The cost per acre for mechanical treatment is \$3,000, assume a 90' treatment area would include work on only 1 acre or less of property and assume the average property value for the subdivision. The cost of the procurement of the equipment would be divided equally between all the properties treated. The cost for the mechanical treatment equipment is estimated at \$11,000 divided by the number of properties treated.

- Cost \$3,000 per acre/\$125.00 est. equipment cost per property
- Valuation \$78,936 avg. property value
- ROI 25.3:1

Responsible Party: Alpine Fire District

Resources: BLM Community at Risk Program, Stephens Grant Proposed Due Dates: Fuels reduction program - 4/30/2005
Grant applications - 3/3/2005

✓ Develop a static water source.

Project Description – The Alpine Fire District, along with property owners will work together to apply for grant funding to install three (3) 10,000 gallon underground static water tanks in the three major subdivisions in this zone.

Assumption – The cost for a 10,000-gallon water tank buried below the frost line is \$10,000. The State of Idaho Ratings Bureau requires a flow rate of 250 gallons a minute for two hours or a capacity of 30,000 gallons of water storage.

- Cost \$90,000
- Valuation \$78,936 avg. property value for 3 properties
- ROI 2.3:1

Responsible Party: Alpine Fire District

Resources: To be determined Proposed Due Date: 3/30/2006

Long Term Actions:

None

WUI Zone 3 – North side of Palisades Reservoir from Indian Creek Road to Swan Valley Fire District Boundary - High Risk

Short Term Actions:

- ✓ Develop a wildland/urban interface public education program.
- ✓ Improve roadways and develop evacuation procedures.

Project Description – The Swan Valley Fire District will conduct public education meetings for property owners in the WUI Zone. Educational materials will be provided. This project will be integrated with development of an evacuation program and will include WUI Zones 4 and 5.

Assumptions – The integrated program cost would be \$5,000 for this zone plus an additional \$10,000 for an engineering study that will identify roadway improvements. If the program saved one home because of actions of the homeowner the ROI would be based on the cost divided into the value of the average property in the subdivision.

• Cost - \$15,000

• Valuation – \$78,936 avg. property value

• ROI - 5.3:1

Responsible Party: Swan Valley Fire District

Resources: BLM Community at Risk Program, FEMA Fire Prevention Grant, applicable agency

funds for road improvement

Proposed Due Date: Public education program – 12/2005

Improve roadways/Evacuation plan – 12/2006

✓ *Develop a fuels reduction program.*

✓ Apply for grants to procure equipment used for mechanical treatment projects.

Project Description – The Swan Valley Fire District will assist property owners in the development of a firewise/fuel reduction program. The project shall include mechanical treatments of properties within a 90' radius of structures and will be based on both removal of fuels and the establishment of appropriate types of landscaping. Two mitigation projects will be integrated together, the development of the fuel reduction program and the procurement of the equipment to support the project.

Assumptions – The cost per acre for mechanical treatment is \$3,000, assume a 90' treatment area would include work on 1 acre or less of property and assume the average property value for the subdivision. The cost of the procurement of the equipment would be divided equally between all the properties treated. The cost for the mechanical treatment equipment is estimated at \$11,000 divided by the number of properties treated.

- Cost \$3,000 per acre/\$125.00 equipment cost per property
- Valuation \$78,936 avg. property value
- ROI 25.3:1

Responsible Party: Swan Valley Fire District

Resources: BLM Community at Risk Program, Stevens Grant Proposed Due Date: Fuels reduction program – 12/2006
Grant applications – 12/2005

✓ Develop a static water source.

Project Description – The Swan Valley Fire District, along with property owners, will work together to apply for grant funding to install three (3) 10,000-gallon underground static water tanks in the four major subdivisions in this zone.

Assumption – The cost for a 10,000 gallon water tank buried below the frost line is \$10,000. The State of Idaho Ratings Bureau requires a flow rate of 250 gallons a minute for two hours or a capacity of 30,000 gallons of water storage.

- Cost \$120,000
- Valuation \$78,936 avg. property value for 4 properties

• ROI – 2.3:1

Responsible Party: Swan Valley Fire District

Resources: To be determined Proposed Due Date: 12/2005

Long Term Actions:

✓ Expand the Swan Valley Fire District to cover this area.

Project Description – Annexation of the individual subdivisions into the Swan Valley Fire District.

Assumption – Efforts to annex individual subdivision into the fire district results in saving one home.

• Cost - \$10.000

• Valuation – \$78.936

• ROI - 7.9 : 1

Responsible Party: Swan Valley Fire District Resources: Operating Funds – Tax Levy

Proposed Due Date: 12/2005

WUI Zone 4 – Southwest side of Palisades Reservoir including Calamity and Palisades Summer Home Areas – High Risk

Short Term Actions:

- ✓ Develop a wildland/urban interface public education program.
- ✓ *Improve roadways and develop evacuation procedures.*

Project Description – The Swan Valley Fire District will conduct public education meetings for property owners in the WUI Zone. Educational materials will be provided. This project will be integrated with development of an evacuation program and will include WUI Zones 3 and 5.

Assumptions – The integrated program cost would be \$5,000 for this zone plus an additional \$10,000 for an engineering study that will identify roadway improvements. If the program saved one home because of actions of the homeowner the ROI would be based on the cost divided into the value of the average property in the subdivision.

- Cost \$15,000
- Valuation \$78,936 avg. property value
- ROI 5.3:1

Responsible Party: Swan Valley Fire District

Resources: BLM Community at Risk Program, FEMA Fire Prevention Grant, applicable agency

funds for road improvement

Proposed Due Date: Public education program – 12/2005

Improve roadways/Evacuation plan – 12/2006

- ✓ Develop a fuels reduction program.
- ✓ Apply for grants to procure equipment used for mechanical treatment projects.

Project Description – The Swan Valley Fire District will assist property owners in the development of a firewise/fuel reduction program. The project shall include mechanical treatments of properties within a 90' radius of structures and will be based on both removal of fuels and the establishment of appropriate types of landscaping. Two mitigation projects will be integrated together, the development of the fuel reduction program and the procurement of the equipment to support the project.

Assumptions – The cost per acre for mechanical treatment is \$3,000, assume a 90' treatment area would include work on 1 acre of less of property and assume the average property value for the subdivision. The cost of the procurement of the equipment would be divided equally between all the properties treated. The cost for the mechanical treatment equipment is estimated at \$11,000 divided by the number of properties treated.

- Cost \$3,000 per acre/\$125.00 equipment cost per property
- Valuation \$78,936 avg. property value
- ROI 25.3:1

Responsible Party: Swan Valley Fire District

Resources: BLM Community at Risk Program, Stephens Grant Proposed Due Date: Fuels reduction program – 12/2006
Grant applications – 12/2005

✓ Develop a static water source.

Project Description – The Swan Valley Fire District, along with property owners will work together to apply for grant funding to install three (3) 10,000-gallon underground static water tanks in the two major subdivisions in this zone.

Assumption – The cost for a 10,000-gallon water tank buried below the frost line is \$10,000. The State of Idaho Ratings Bureau requires a flow rate of 250 gallons a minute for two hours or a capacity of 30,000 gallons of water storage.

- Cost \$60,000
- Valuation \$78,936 avg. property value for 2 properties
- ROI 2.3:1

Responsible Party: Swan Valley Fire District

Resources: To be determined Proposed Due Date: 12/2005

Long Term Actions:

✓ Expand the Swan Valley Fire District to cover this area.

Project Description – Annexation of the individual subdivisions into the Swan Valley Fire District.

Assumption – Efforts to annex individual subdivisions into the fire district results in saving one home.

- Cost \$10,000
- Valuation \$78,936 avg. property value
- ROI 7.9:1

Responsible Party: Swan Valley Fire District Resources: Operating Funds – Tax Levy

Proposed Due Date: 12/2005

WUI Zone 5 – South side of Snake River from the Palisades Dam to Fall Creek Road including the Little Lemhi Scout Camp and Ta-Man-A-Wis Scout Camp – High Risk

Short Term Actions:

✓ Work with the Bureau of Reclamation to reopen the road below the Palisades Dam for emergency vehicles.

Project Description – The Swan Valley Fire Chief and Fire District Commissioners will meet with the Bureau of Reclamation and request that arrangements be made to provide access to emergency response vehicles below the Palisades Dam to Snake River Road during an emergency.

Assumptions: It is assumed that the only cost for project will be those associated with the writing of an Memorandum of Understanding between the Fire Protection District and the Bureau of Reclamation.

- Cost \$2,000
- Valuation \$291,242 avg. property value
- ROI 145.6:1

Responsible Party: Swan Valley Fire District

Resources: Operating Funds Proposed Due Date: 12/2006

- ✓ Develop a wildland/urban interface public education program.
- ✓ *Improve roadways and develop evacuation procedures.*

Project Description – The Swan Valley Fire District will conduct public education meetings for property owners in the WUI Zone. Educational materials will be provided. This project will be integrated with development of an evacuation program and will include WUI Zones 3 and 4.

Assumptions – The integrated program cost would be \$5,000 for this zone plus an additional \$10,000 for an engineering study that will identify roadway improvements. If the program saved one home because of actions of the homeowner the ROI would be based on the cost divided into the value of the average property in the subdivision.

- Cost \$15,000
- Valuation \$291,242 avg. property value
- ROI 16.2:1

Responsible Party: Swan Valley Fire District

Resources: BLM Community at Risk Program, FEMA Fire Prevention Grant, applicable agency

funds for road improvement

Proposed Due Date: Public education program – 12/2005

Improve roadways/Evacuation plan – 12/2006

- ✓ Develop a fuels reduction program.
- ✓ Apply for grants to procure equipment used for mechanical treatment projects.

Project Description – The Swan Valley Fire District will assist property owners in the development of a firewise/fuel reduction program. The project shall include mechanical treatments of properties within a 90' radius of structures and will be based on both removal of fuels and the establishment of appropriate types of landscaping. Two mitigation projects will be integrated together, the development of the fuel reduction program and the procurement of the equipment to support the project.

Assumptions – The cost per acre for mechanical treatment is \$3,000, assume a 90' treatment area would include work on 1 acre or less of property and assume the average property value for the subdivision. The cost of the procurement of the equipment would be divided equally between all properties treated. The cost for the mechanical treatment equipment is estimated at \$11,000 divided by the number of properties treated.

- Cost \$3,000 per acre/\$125.00 equipment cost per property
- Valuation \$291,242 avg. property value
- ROI 93.2:1

Responsible Party: Swan Valley Fire District

Resources: BLM Community at Risk Program, Stevens Grant Proposed Due Date: Fuels reduction program – 12/2006 Grant applications – 12/2005

✓ Develop a static water source.

Project Description – The Swan Valley Fire District, along with property owners will work together to apply for grant funding to install two (2) 10,000-gallon underground static water tanks in the selected locations along Snake River Road.

Assumption – The cost for a 10,000-gallon water tank buried below the frost line is \$10,000. The State of Idaho Ratings Bureau requires a flow rate of 250 gallons a minute for two hours or a capacity of 30,000 gallons of water storage.

- Cost \$20,000
- Valuation \$291,242 avg. property value for 1 properties
- ROI 14.6 : 1

Responsible Party: Swan Valley Fire District

Resources: To be determined Proposed Due Date: 12/2005

Long Term Actions:

✓ Reduce Swan Valley Fire Department response times by constructing a bridge across the Snake River at Irwin, Idaho.

Project Description – Construct a 60' wide cement bridge across the Snake River at Irwin.

Assumptions – The cost for construction is based on \$80 a square foot for a 60' x 300' cement bridge structure. This project is based on the need to provide access to both the homes on the south side of the Snake River as well as to provide emergency medical treatment to residents and the youth camps also located in the area.

- Cost \$1.800.000
- Valuation \$291,242 avg. property value
- ROI 0.2: 1 Safety Issue/Public Recreation Issue

Responsible Party: Bonneville County Commissioners/Bonneville County Road and Bridge Dept.

Resources: Highway Funds Proposed Due Date: 12/2015

✓ Build a substation for the Swan Valley Fire District to cover areas on the south side of the Snake River.

Project Description – Construction of a two-bay metal structure to be used as a Swan Valley Fire Department substation.

Assumption – The cost for this project is based on construction costs for similar structures. This task also assumes that volunteers are available on the south side of the Snake River to man the equipment housed in the station.

- Cost \$150,000
- Valuation \$291,242 avg. property value
- ROI 1.9:1

Responsible Party: Swan Valley Fire District

Resources: General Obligation Bond and USDA RD Loan

Proposed Due Date: 12/2010

✓ Expand the boundaries of the Swan Valley Fire District to include areas on the south side of the Snake River.

Project Description - Annexation of the individual subdivisions into the Swan Valley Fire District.

Assumption – Efforts to annex individual subdivisions into the fire district results in saving one home.

- Cost \$10,000
- Valuation \$291,242 avg. property value
- ROI 29.1:1

Responsible Party: Swan Valley Fire District Resources: Operating Funds – Tax Levy

Proposed Due Date: 12/2005

WUI Zone 6 – Kelly Island riparian area between the north side of the Snake River and the Heise Road – Medium Risk

Short Term Actions:

✓ *Improve roadways and develop evacuation procedures.*

Project Description – The Bureau of Land Management will develop evacuation routes and supporting signage for the Kelly Island public areas.

Assumptions: The BLM will close roadways that are not safe for public use and will designate roadways for access and for evacuation routes.

- Cost To be determined by BLM
- Valuation N/A Public Access and Recreational Uses Only
- ROI N/A Safety Issue

Responsible Party: BLM

Resources: BLM Operating Funds, applicable agency funds for road improvement Proposed Due Date: Proposal will be presented to the BLM Field Office Manager for consideration by 12/04. Completion of this mitigation is dependent upon concurrence by the Field Office Manager, available budget and acceptable environmental effects analysis.

✓ Develop a fuels reduction program.

Project Description – The BLM will reduce fuel loading in the Kelly Island public access areas and designate safe fire areas.

Assumptions – The BLM's actions not only provide for safe access of the public to this area for recreational uses but also compliment fire mitigation actions taken by property owners in the WUI Zones in Jefferson and Madison Counties who are undertaking fuel reduction activities. Estimate Kelly Island as 640 acres and the cost for fuel reduction at \$3,000 per acre.

- Cost \$1,920,000
- Valuation N/A Public Access and Recreational Uses Only
- ROI N/A Safety Issue

Responsible Party: BLM

Resources: BLM Operating Funds

Proposed Due Date: Proposal will be presented to the BLM Field Office Manager for consideration by 12/04. Completion of this mitigation is dependent upon concurrence by the Field Office Manager, available budget and acceptable environmental effects analysis.

Long Term Actions:

None

WUI Zone 7 – The CRP intermix on the east bench of the county west of Bone Road from Ririe Reservoir to the southern County boundary – Medium Risk

Short Term Actions:

✓ Develop a wildland/urban interface public education program.

Project Description – The Bonneville County Fire District #1 will conduct public education meetings for property owners in the WUI Zone. Educational materials will be provided.

Assumptions – The integrated program cost would be \$10,000 for this zone. If the program saved one home because of actions of the homeowner the ROI would be based on the cost divided into the value of the average property in the subdivision.

- Cost \$10,000
- Valuation \$87,721 avg. property value
- ROI 8.8:1

Responsible Party: Bonneville Fire District #1 Resources: BLM Communities at Risk Program

Proposed Due Date: 12/2007

Long Term Actions:

✓ Expand the boundary of the Bonneville County #1 Fire District to include unprotected areas.

Project Description – Annexation of the individual subdivisions into the Bonneville County Fire District #1. Homeowners will be contacted and made aware of the opportunity to join the fire district by petition.

Assumption – Efforts to annex individual subdivisions into the fire district results in saving one home.

- Cost \$10,000
- Valuation \$87,721 avg. property value
- ROI 8.8 : 1

Responsible Party: Bonneville Fire District #1
Resources: General Operating Funds – Tax Levy

Proposed Due Date: Homeowners contacted – 12/2007

✓ Working with the U.S. Department of Agriculture, develop mitigation measures for CRP grounds in the Bone area.

Project Description – The Bonneville County Fire District #1 will work with the USDA and the individual property owners to develop mitigation strategies for the CRP Land currently in the program and for future applications.

Assumptions – The mitigations undertaken will result in the decrease in wildfires on CRP Lands and will thereby reduce the risk to adjacent croplands and private structures.

- Cost TBD
- Valuation \$87,721 avg. property value/TBD crop values
- ROI TBD

Responsible Party: Bonneville Fire District #1

Resources: To be determined Proposed Due Date: 12/2007

WUI Zone 8 – The west end of the county from the west boundary of the City of Idaho Falls to the INEEL boundary – Medium Risk

Short Term Actions:

✓ Develop a wildland/urban interface public education program.

Project Description – The Bonneville County Fire District #1 will conduct public education meetings for property owners in the WUI Zone. Educational materials will be provided.

Assumptions – The integrated program cost would be \$5,000 for this zone. If the program saved one home because of actions of the homeowner the ROI would be based on the cost divided into the value of the average property in the subdivision.

- Cost \$5,000
- Valuation \$124,780
- ROI 25.0:1

Responsible Party: Bonneville Fire District #1
Resources: BLM Communities at Risk Program

Proposed Due Date: 12/2007

✓ Develop a fuels reduction program.

Project Description – The Bonneville County Fire District #1 will assist property owners in the development of a firewise/fuel reduction program. The project shall include mechanical treatments of properties within a 90' radius of structures and will be based on both removal of fuels and the establishment of appropriate types of landscaping. Two mitigation projects will be integrated together, the development of the fuel reduction program and the procurement of the equipment to support the project.

Assumptions – The cost per acre for mechanical treatment is \$3,000, assume a 90' treatment area would include work on 1 acre or less of property and assume the average property value for the subdivision. The cost of the procurement of the equipment would be divided equally between all the properties treated. The cost for the mechanical treatment equipment is estimated at \$11,000 and will spread across all properties treated.

- Cost \$3,000 per acre/\$125.00 est. per property
- Valuation \$124,780 avg. property value
- ROI 40.0 : 1

Responsible Party: Bonneville Fire District #1 Resources: BLM Communities at Risk Program

Proposed Due Date: 12/2007

Long Term Actions:

✓ Expand the boundary of the Bonneville Fire District #1 to include unprotected areas west of Idaho Falls to the INEEL boundary.

Project Description – Annexation of the individual subdivisions into the Bonneville County Fire District #1. Homeowners will be contacted and made aware of the opportunity to join the fire district by petition.

Assumption – Efforts to annex individual subdivisions into the fire district results in saving one home.

- Cost \$10,000
- Valuation \$124,780 avg. property value
- ROI 12.5:1

Responsible Party: Bonneville Fire District #1 Resources: General Operating Funds – Tax Levy

Proposed Due Date: Homeowners contacted – 12/2007